

REMARKS

Claims 1 through 69 are now presented for examination. Claims 2, 10, 12, 14, 18-26 and 34-69 have been canceled without prejudice or disclaimer of subject matter. Claims 1, 9, 11, 13, 15, 16, 26, 27 and 29-32 have been amended to define still more clearly what Applicants regard as their invention, in terms which distinguish over the art of record. Claims 1 and 26 are the only independent claims.

The drawings have been objected to in that Figs. 17 and 18 should be labeled "PRIOR ART" and Fig. 6 should be changed to correct the error in having the outputs of Average Calculating Circuits 130 and 131 connected to the same left-most group of arrows which connect to the input of Divider 134 and Subtractor 136. Accordingly, replacement sheets are enclosed in which Figs. 17 and 18 are labeled as "PRIOR ART" and to correct the error in Fig. 6. Approval of the changes is respectfully requested.

The specification has been amended to correctly disclose that the GN1 and GN2 signals are inputted to gain adjusting circuits 113 and 112 in Fig. 5, respectively, rather than Fig. 7.

A corrected Information Disclosure Statement to be substituted for the Information Disclosure Statement filed December 16, 2003 is enclosed to correctly submit Japanese references 7-038812 and 7-038814. It is respectfully requested that these references be considered.

Claims 1, 9, 11-13, 26, 27, 29, 30 have been rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,791,608 (Miyazawa). Claims 15, 16, 31 and 32 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Miyazawa. With regard to the claims as currently amended, these rejections are traversed.

Independent Claim 1 as currently amended is directed to image sensing apparatus in which an image sensing device has an image sensing area which is divided into plural image sensing sections. Each image sensing section has plural pixels which generate electric signals corresponding to amounts of incident light and plural output units respectively outputting the electric signals of the plural image sensing sections outside the image sensing device. A shutter opens and closes an optical path of light incoming to the image sensing device. A light source emits light to at least a part of the image sensing area of the image sensing device so that the light is projected onto the plural image sensing sections. A controller controls the shutter to close the optical path and controls the light source to emit light while the shutter closes the optical path. A correction unit corrects level differences owing to characteristic differences of the plural output units between the electric signals from the plural image sensing sections with the optical path opened on the basis of the electric signals outputted by the plural output units with the optical path closed and the light source emitting light.

Independent Claim 26 as currently amended is directed to a control method for an image sensing apparatus that has an image sensing device with an image sensing area divided into plural image sensing sections. Each section has plural pixels which generate electric signals corresponding to amounts of incident light and plural output units respectively outputting the electric signals of the plural image sensing sections to outside the image sensing device. A shutter opens and closes the optical path of incoming light to the image sensing device and a light source emits light to at least a part of the image sensing area so that the light is projected onto the plural image sensing sections. According to the method, the optical path of incoming light is closed by the shutter and light emitted by the light source is emitted with the optical path closed.

The level difference owing to characteristic differences of the plural output units between electric signals obtained from the plural image sensing sections with the optical path open is corrected on the basis of electric signals outputted by the plural output units with the optical path closed and the light source emitting light.

In Applicants's view, Miyazawa discloses a digital camera whose lens is detachable. In the camera, a judging section judges whether an image failure is caused due to dirt adhering on an image sensor device unit. An illuminating member is disposed in the vicinity of the image sensor device unit such that irradiation light can enter the image sensor device and which is driven when at least the judgment is made. A memory stores a position of a picture element of the image sensor device corresponding to image sensor data causing image failure when the judging section judged that image failure has been caused, and a correcting section corrects the image sensor data output from the image sensor device unit based on picture element position data stored in the memory when a picture is photographed after the lens is interchanged.

According to the invention of Claims 1 and 26 as currently amended, each of plural image sensing sections includes plural pixels and generates electric signals which are sent to plural output units which output the electric signals. A shutter is controlled to close an incoming optical path while a light source projects light onto the plural image sensing sections. A correction unit corrects level differences between electric signals obtained at the output of the image sensing device from the plural image sensing sections with the optical path opened on the basis of the electric signals outputted from the plural output units with the optical path closed and the light source emitting light. Advantageously, highly accurate correction of level differences

among the plural outputs from the image sensing device is obtained and imbalances among the different image sensing sections is substantially reduced.

The correction unit feature of Claims 1 and 26 is shown at least in Figs. 5 and 6 and is disclosed in the specification at least from line 23 of page 26 to line 23 of page 28 and from line 15 of page 30 to line 11 of page 34. No new matter is believed to have been added.

Miyazawa may disclose apparatus that determines if there is any defect on a CCD 103' using the image captured with emitted backlight while the shutter is closed and then corrects the signal due to CCD defects. In Miyazawa, however, there is only one output line from the CCD 103' and Miyazawa is devoid of any teaching or suggestion of plural output units from image sensor sections to the outside of the image sensor. Further, Miyazawa's disclosure is restricted to detection of and possible correction of defective picture element positions but fails to teach or suggest anything about correcting level differences among signals obtained from plural image sensing sections or a correction unit outside a sensor device that receives outputs from plural image sensor sections and corrects level differences among the plural image sensor sections owing to characteristic differences of plural output units as in Claims 1 and 26. Accordingly, it is not seen that Miyazawa's dirt defect detection arrangements in any manner teaches or suggests the feature of correcting level differences among outputs obtained from plural image sensing units of an image sensing device with an open optical path on the basis of outputs obtained with a closed optical path and a light source emitting light as in Claims 1 and 26. It is therefore believed that Claims 1 and 26 as currently amended are completely distinguished from Miyazawa and are allowable.

A review of the other art of record has failed to reveal anything which, in Applicants' opinion, would remedy the deficiencies of the art discussed above, as references against the independent claims herein. Those claims are therefore believed patentable over the art of record.

The other claims in this application are each dependent from one or another of the independent claims discussed above and are therefore believed patentable for the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual consideration or reconsideration, as the case may be, of the patentability of each on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, Applicants respectfully request favorable consideration and reconsideration and early passage to issue of the present application.

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Respectfully submitted,



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